

### REMARKS

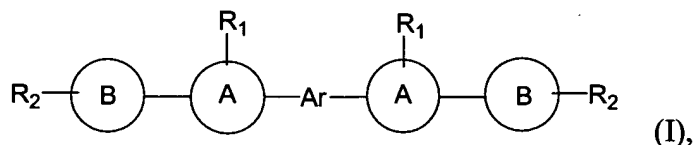
Claims 1-12 and 20-31 are currently pending. Reconsideration of the application is requested in view of the following remarks.

#### Rejections under 35 U.S.C. § 103(a)

The Examiner rejects the pending claims for obviousness on two grounds, each of which is traversed below:

Claims 1-12 are rejected as obvious over Lee et al. ("Lee"). See the final Office Action, page 2, line 11 through page 3, line 5.

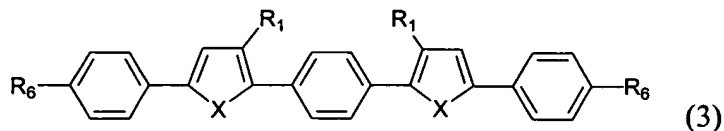
Independent claim 1 is discussed first. It covers a compound of formula (I):



in which Ar is aryl, heteroaryl, or oligoaryl; A is furyl; B is aryl or heteroaryl; R<sub>1</sub> is hydrogen, alkenyl, alkynyl, aryl, heteroaryl, cyclyl, heterocyclyl, or oligoaryl; and R<sub>2</sub> is hydrogen, alkyl, alkenyl, alkynyl, aryl, heteroaryl, cyclyl, or heterocyclyl.

Lee discloses a one-pot synthesis of substituted furans and pyrroles from propargylic dithioacetals. Referring to the products from the synthesis (covered by formula (3) shown below), the Examiner contends that "Lee et al. clearly teaches for formula (3), [in which] R<sub>1</sub> may be phenyl, X may be oxygen, and R<sub>6</sub> may be hydrogen (see **Tables 1-3**)."

See the final Office Action, page 2, lines 20-21, emphasis added.



Applicants submit that the Examiner's reliance on Tables 1-3 in Lee is misplaced.

First of all, the Examiner mistakenly believes that the compounds shown in Tables 1 and 2 are covered by formula (3). Formula (3) represents poly-aryl compounds. Yet, Tables 1 and 2 show mono-aryl furans or pyrroles; they do not show poly-aryl compounds of formula (3). Thus, the Examiner errs in relying on Tables 1 and 2 to support his rejection.

Turning to Table 3 in Lee, this table shows 5 poly-aryl compounds of formula (3), i.e., compounds 11a-11e. In compounds 11a-11d, X is O and R<sub>1</sub> is n-Bu. In compound 11e, X is N(Bu) and R<sub>1</sub> is Ph. Thus, Lee at most suggests poly-aryl compounds containing a furyl moiety substituted with alkyl (i.e., X is O and R<sub>1</sub> is alkyl) and poly-aryl compounds containing a pyrrolic moiety substituted with aryl (i.e., X is NR and R<sub>1</sub> is aryl). Among the compounds of formula (I) recited in claim 1, those in which A is furyl and R<sub>1</sub> is aryl are the closest to the five compounds shown in Table 1. They correspond to compounds of formula (3) in which X is O and R<sub>1</sub> is aryl. As discussed above, Lee only suggests that X is O when R<sub>1</sub> is alkyl and R<sub>1</sub> is aryl when X is NR. In other words, it does not even suggest the compounds of formula (I) in which X is O and R<sub>1</sub> is aryl, the closest compounds to the five compounds shown in Table 1. Thus, claim 1 is not rendered obvious by Lee.

Of note, in the response to the first Office Action dated February 10, 2005, Applicants pointed out that even if a *prima facie* case of obviousness has been made, it can be successfully rebutted by two unexpected advantages of the claimed compounds. The Examiner contends in the final Office Action that the discussion of the unexpected advantages is not considered persuasive. He asserts that "Lee teaches all the required substituent groups for each of the variables of compound (3)," i.e., "R<sub>1</sub> may be Ph, Ar may be phenyl and R<sub>6</sub> may be H (see Table 1)." See the final Office Action, page 4, lines 15-17. Clearly, referring to Table 1, the Examiner believes that Lee suggests compounds of formula (I) recited in claim 1.

Applicants reiterate that the Examiner's reliance on Table 1 is misplaced. More specifically, Table 1 in Lee shows mono-aryl compounds. Yet, formula (I) represents poly-aryl compounds. Given the substantial difference between these types of compounds, the Examiner's assertion is clearly fallacious. In other words, Lee does not disclose or suggest any poly-aryl compounds containing a furyl moiety substituted with aryl. See lines 1-11 above.

Even if the Examiner is correct in asserting that Lee teaches compounds of formula (I) recited in claim 1 (which Applicants do not concede), the rejection can still be successfully rebutted by two unexpected advantages of the claimed compounds.

As discussed in the first Office Action dated February 10, 2005, compounds 1 and 2 of the present application, containing a furyl moiety substituted with aryl, have much higher glass transition temperatures (T<sub>g</sub>s) than compound 11a disclosed in Lee, containing a furyl moiety

substituted with alkyl. Also, electroluminescence devices prepared from compounds 1 and 2 exhibited much higher maximal brightness than an electroluminescence device prepared from prior art compound 11a. Lee does not suggest any of the above-described advantages of the claimed compounds. Given these two unexpected advantages, the compounds of claim 1 are clearly not obvious over compound 11a disclosed in Lee (i.e., compound 3 disclosed in the present application). In other words, in view of Lee, one skilled in the art would not have been motivated to modify compound 11a to arrive at the compounds of claim 1.

For the reasons set forth above, claim 1 is not rendered obvious by Lee. Neither are claims 2-12, all of which depend from claim 1.

## II

Claims 20-31 are rejected as being obvious over Mori et al., U.S. Patent 5,281,489 ("Mori") in view of Lee. See the final Office Action, page 3, line 6 through page 4, line 8.

Independent claim 20 is discussed first. This claim covers an electroluminescence device that includes an anode layer, a hole transporting layer, an electron transporting layer, and a cathode layer, in which the anode layer, the hole transporting layer, the electron transporting layer, and the cathode layer are disposed in the above order. The hole transporting layer includes a compound of formula (I), which features A being furyl and R<sub>1</sub> is other than aryl.

Mori discloses an electroluminescent element containing an anode, a cathode, and an organic luminescent layer having a luminescent agent. It teaches that the luminescent agent can be polymers of formulas (1)-(4) shown in column 5, lines 1-35, which are substantially different from the compound of formula (I) recited in claim 20. Nowhere in Mori is suggested using any compounds of formula (I). Lee does not cure the deficiency in Mori. Indeed, as discussed above, Lee also does not disclose or suggest any compound of formula (I) in which A is furyl and R<sub>1</sub> is other than alkyl. Thus, claim 20, requiring a compound of formula (I) in which A is furyl and R<sub>1</sub> is other than alkyl, is not rendered obvious by Mori in view of Lee. Even if a *prima facie* case of obviousness has been made (which Applicants do not concede), it can still be successfully rebutted by the above-discussed two unexpected advantages of the compounds of formula (I) recited in claim 20. See, page 7, lines 28 through page 8, line 7, *supra*.

For the reasons set forth above, claim 20 is not rendered obvious by Mori in view of Lee. Neither are claims 21-31, all of which depend from claim 20.

Applicant : Tien-Yau Luh et al  
Serial No. : 10/643,041  
Filed : August 18, 2003  
Page : 9 of 9

Attorney's Docket No.: 08919-082001 / 03A-910110

CONCLUSION

Applicants submit that rejections asserted by the Examiner have been overcome, and that claims 1-12 and 20-31, as pending, define subject matter that is non-obvious. On this basis, it is submitted that all claims are now in condition for allowance, an action of which is requested.

Please apply any other charges to deposit account 06-1050, referencing Attorney's Docket No.: 08919-082001.

Respectfully submitted,

Date: \_\_\_\_\_

12-1-05

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